# 4

# Chickahominy Riverfront Park

## 4.1 Existing Site Conditions

The CRP property comprises approximately 137 acres and is currently developed as a waterfront park with a fishing pier, campground, boat ramp, two swimming pools, picnic shelter and playground. In addition, there is a facility for rowing clubs which includes a launch dock, racks for rowing sculls and storage shed. The park area is made up of mostly forested areas some of which are wetlands and Resource Protection Area (RPA) buffers and open grass field areas.

### 4.1.1 Existing Zoning

The Chickahominy Riverfront Park property is currently zoned as a Public Land District (PL) which is described in County Code Sec. 24-535. Some the allowable uses for Public Land Districts include the following:

- Accessory buildings and structures.
- Accessory uses, as defined in section 24-2 and including privately owned uses that are either limited to a fully enclosed building and encompassing less than 25 percent of the floor area of the public use or are a free-standing building or area covering less than 10 percent of the overall land area.
- Public meeting halls under 30,000 square feet.
- Wayside stands for seasonal sale of agricultural products, limited in area to 500 square feet.

In the public land district, structures to be erected or land to be used for the following public uses shall be permitted only after the issuance of a special use permit approved by the board of supervisors.

- Campgrounds.
- Community recreation facilities, public, including parks, playgrounds, clubhouses, boating facilities, swimming pools, ball fields, tennis courts, and other similar recreation facilities.
- Flea markets and farmers markets, temporary or seasonal.

- Horse show areas, polo fields, riding stables.
- Marinas, docks, and waterfront recreation facilities.
- Retreat facilities and public meeting halls.
- Wayside stands for sale of agricultural products over 500 square feet in area.
- Yacht clubs and marinas and commercial and service facilities accessory thereto.

### 4.1.2 Existing Utilities

Information related to existing on-site utilities was provided by JCC and was reviewed and supplemented with walk-through visual inspections. There was no mapping or surveying of surface or underground utilities performed during the master planning process. Utilities depicted on diagrams and plans within this report are approximate and based on information provided by JCC and other sources. The findings of the existing utility research and observations at the time of the study are summarized below.

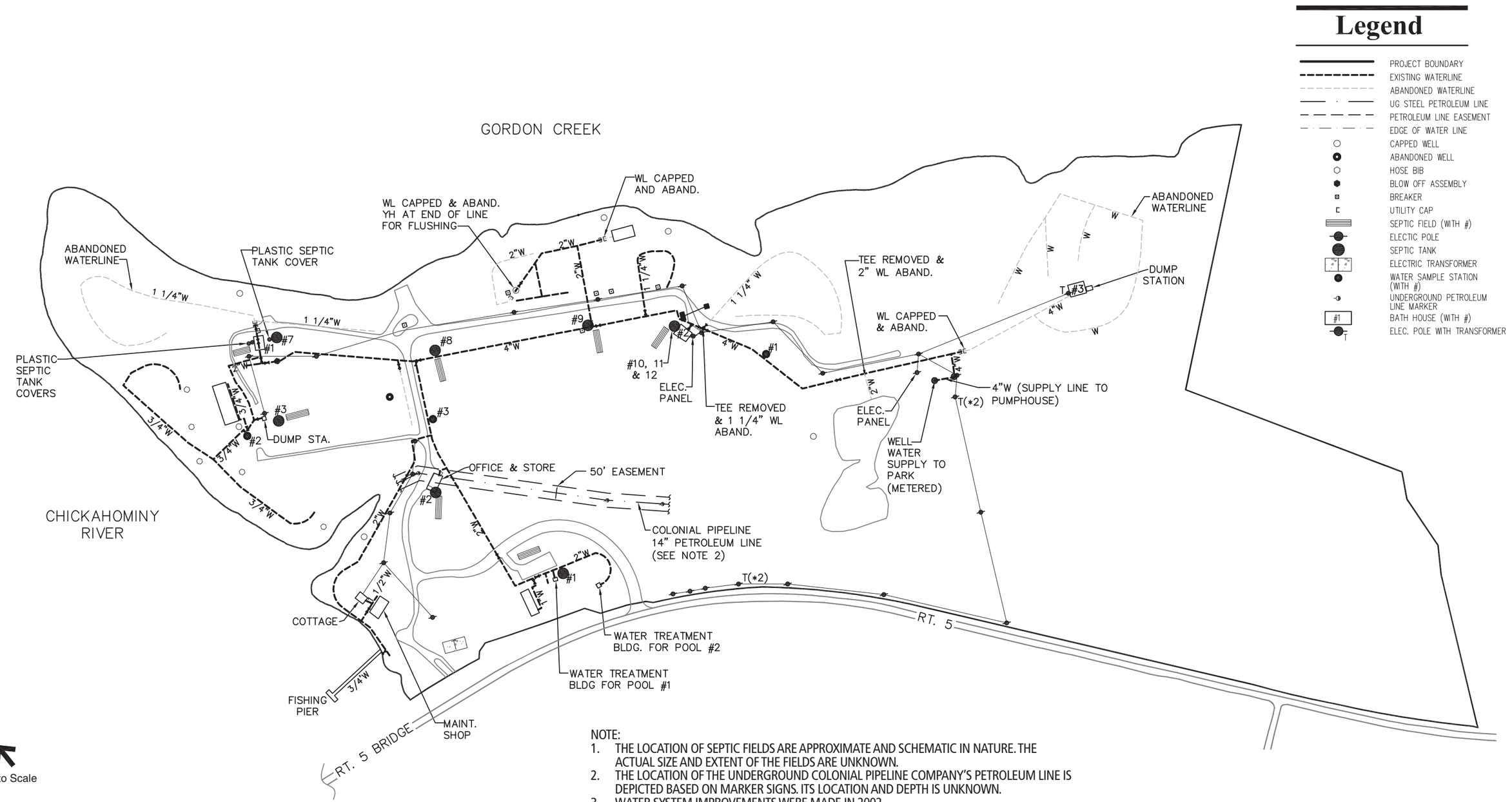
- **Water**
  There is no public water service to the property as it is outside the JCSA Public Service Area (PSA). JCC has stated that there are no future plans by the county to extend the PSA to the park property. Water service is currently provided by a single well located in the northeast portion of the site near the gate to the rowing facility and RV/boat storage area. There is an existing pumphouse building from which a 4" water main serves the entire park.

  The pumphouse interior was not accessible for inspection, however the exterior of the building and roof appear to be in good condition. The interior of the building and the associated equipment is assumed to be in similar condition and suitable for continued use.

  The 4" line runs to the west along the gravel park road and branches off to various camp site areas and to the restroom buildings. The depth of the pipe was not confirmed but is assumed to be approximately 3' deep. Information obtained from JCC indicates that there are approximately seven capped/abandoned wells located on the property. Improvements to the existing water system were put into service in approximately 2002. (See Figure 4-1 for existing water system information)

- **Sanitary Sewer**
  There is no public sanitary sewer service to the property as it is outside the PSA. JCC has stated that there are no future plans by the county to extend the PSA to the park property.

  The existing sanitary system consists of 12 to 15 septic tank and leach field systems. A visual inspection onsite noted that the septic tanks were labeled from one to 12; anecdotal information suggests that perhaps there may be as many as 15 such systems. The surface observations of the tanks and septic fields observed indicated that the systems appear to be in generally good condition. There is no evidence of settlement or leeching around the tanks and the fields appear to be functioning well with no evidence of surface saturation or




## Legend

- PROJECT BOUNDARY
- EXISTING WATERLINE
- ABANDONED WATERLINE
- UG STEEL PETROLEUM LINE
- PETROLEUM LINE EASEMENT
- EDGE OF WATER LINE
- CAPPED WELL
- ABANDONED WELL
- HOSE BIB
- BLOW OFF ASSEMBLY
- BREAKER
- UTILITY CAP
- SEPTIC FIELD (WITH #)
- ELECTIC POLE
- SEPTIC TANK
- ELECTRIC TRANSFORMER
- WATER SAMPLE STATION (WITH #)
- UNDERGROUND PETROLEUM LINE MARKER
- BATH HOUSE (WITH #)
- ELEC. POLE WITH TRANSFORMER

NOTE:
1. THE LOCATION OF SEPTIC FIELDS ARE APPROXIMATE AND SCHEMATIC IN NATURE. THE ACTUAL SIZE AND EXTENT OF THE FIELDS ARE UNKNOWN.
2. THE LOCATION OF THE UNDERGROUND COLONIAL PIPELINE COMPANY'S PETROLEUM LINE IS DEPICTED BASED ON MARKER SIGNS. ITS LOCATION AND DEPTH IS UNKNOWN.
3. WATER SYSTEM IMPROVEMENTS WERE MADE IN 2002.

Not to Scale



Figure 4-1
**Existing Utilities**
Chickahominy Riverfront Park

settlement. The leaching fields are typically about 100'± by 40'± and are located in open grass areas. Each field, if in good subsurface condition and functioning properly, may have a capacity to treat up to 800 to 1,000 gallons per day.

No internal inspections of the tanks were performed, however it was noted that the tanks at the bathhouse and at some other locations are manufactured by Parsley Septic Tank, Inc. With proper maintenance, including routine pumping out of the septic tanks, the systems could remain in service and be used for future improvements provided that the tanks and fields are not impacted by the development. (See Figure 4-1 for existing sanitary sewer system information)

*Existing Septic Tanks*

- **Dominion Virginia Power**

  The site is served by Dominion Virginia Power (DVP) primarily by overhead electric service lines and pole mounted transformers. In the vicinity of the pools, shelter and playground area, the electric service runs underground for a short distance to the building and there are at-grade transformers.

  The main overhead power line enters the site from Route 5 just east of the pond and traverses the property to the area of the pumphouse and then throughout the site along the gravel park road. The service appears to be in generally good condition and adequate for continued service. Relocation and upgrades for portions of the system will be necessary for future improvements. (See Figure 4-1 for existing electrical system information)

  The electrical system on the owner's (JCC) side of the meter consists of approximately seven electrical panel boxes that feed the electrical circuits for the camp sites along Gordon Creek (approximately from site #94 to site #215). The camp sites are equipped with outlet boxes for each site. In general, the electrical system in the camp site area is in very poor condition and not suitable for reuse for future improvements.

  The electrical service directly to the buildings and pool area is relatively new and appears to be in good condition for continued future use. (See Figure 4-1)

- **Natural Gas**

  There is no existing Virginia Natural Gas (VNG) service to the site. There are propane tanks located at the store/office building and at the bathhouse which are serviced by Suburban Propane of Williamsburg, VA (tel. no. on tank 800-432-9399).


*Petroleum Pipeline Sign*

- **Petroleum Pipeline**
  There is a petroleum pipeline located on the property owned by Colonial Pipeline Company that runs from the Chickahominy River near the store building (two signs posted) to the field area across the entrance road from the pool parking lot (sign posted at location).

  From information provided by Colonial Pipeline Company, the pipeline is reported to be a 14" diameter steel petroleum pipeline within a 50' utility easement (25' on each side of pipe) and buried to a depth of approximately 3 to 18 feet.

- **Telephone**
  There is telephone service to the park provided by Verizon. Service is provided to the pool building and camp store/office building.

- **Fiber Optic**
  At this time, there is no known fiber optic lines serving the site.

### 4.1.3 Traffic and Existing Access

Adjacent to the park, there is ongoing construction of the Route 5 bridge crossing the Chickahominy River. The construction is not directly impacting the park facilities or operations.

On Route 5, the annual average daily traffic (AADT) in 2007 was 3100 and the annual average weekday daily traffic (AAWDT) was 3300. Traffic into and out of the site is, on an average, quite low. During peak periods during the summer when the camping facilities, boat ramp and swimming pools are in use, the number of trips into and out of the site is estimated to be approximately 280 trips. At current use levels, improvements to the entrance or the addition of turn lanes on Route 5 are not warranted.

The posted speed limit for Route 5 is 55 MPH and the site distance at the existing entrance is in excess of 1000 feet to the east and west.

### 4.1.4 Existing Roads

The existing entrance to the park from Route 5 was recently constructed approximately 500 ft. to the east of the old entrance in order to accommodate the construction of the new bridge. The entrance road is paved from Route 5 to the driveway of the existing paved parking lots for the pools and playground areas. The entrance and asphalt is in good condition and suitable for continued use. The road past the driveway was paved in June 2008.

Where feasible, the footprint of the internal roads may in some cases serve as proposed roads or park pathways. Many of the existing roads are located within the RPA buffer, especially on the bluffs along the Chickahominy River and Gordon Creek.

### 4.1.5 Existing Parking

Vehicle parking for the park can be broken down into five general areas as follows:

- Parking lot at the swimming pools, shelter playground area- This parking lot is paved and is in excellent condition as it was recently constructed. It has approximately 30 standard spaces and four ADA accessible spaces. The parking lot is in a condition which allows it to remain in service without any additional improvements.

*Existing CRP Pool Parking Lot*

- Unorganized parking area alongside the bridge in the area landward of the existing fishing pier- This area is not paved and is currently used by visitors using the fishing pier. The area would need be to be improved for any proposed future use.
- Vehicle/boat trailer parking at boat ramp- vehicles with boat trailers currently use the grassed field area south of the ramp on the west side of the road to the ramp. There is no organized parking in this area. It currently accommodates up to approximately 60 vehicles and trailers.
- Parking at campsites- each camp site has unpaved parking off of the park road, with equates to approximately 244 spaces.
- Event Parking/Overflow Parking- for events, such as the County Fair, parking is provided on the grass area directly north of the entrance (driving range area). This area is suitable for continued parking for occasional events. It currently accommodates up to approximately 400 to 450 vehicles.

### 4.1.6 Existing Boat Ramp

The existing boat ramp was constructed in 2004 and consists of a paved asphalt approach to the ramp and two wood timber tending piers. The ramp is approximately 60′ wide and able to accommodate up to four vehicles launching boats at the same time. The ramp is in very good condition and is extensively used throughout the year. The ramp is recommended for continued future use with no renovations or improvements suggested at this time.

*Existing Boat Ramp*

### 4.1.7 Existing Fishing Pier

The existing fishing pier is approximately 250' long with a "T" pier at the end and is approximately 8' wide. It is constructed of wood piles and decking and appears to be in poor to fair condition. Its deck elevation is just above the high tide elevation and as a result, during high tides and storm events, the deck if often submerged. With routine maintenance of the decking, the pier is suitable for continued future use. At such a time when significant improvements are made in the upland area, a major renovation or complete replacement of the fishing pier is recommended.

### 4.1.8 Existing Camp Sites

There are approximately 173 existing camp sites at the park comprise of primitive tent sites to RV sites with partial (water and electric) or full (water, electric and sanitary) utility service. The sites are generally not well maintained and consist of compacted dirt and gravel camp areas with connecting gravel roads and vehicle parking areas. There is no formal landscaping within the camp site areas. Approximately 70% of the sites are located within the RPA directly along the bluffs of the Chickahominy River and Gordon Creek. The existing utilities at the camp sites are in generally poor condition.

### 4.1.9 Existing Buildings

The consulting team conducted a building inventory and a walk-around visual inspection of the buildings for the purpose of determining potential reuse of the buildings for future park operations. The pool area and associated buildings, including the adjacent picnic pavilion are suitable for reuse. The remaining buildings and structures have minimal or no reuse potential.

Refer to Appendix D for a brief description of the types and conditions of the buildings and graphic map identifying the letter designation ("A" thru "O") for the buildings described.

### 4.1.10 Existing Landscaping and Amenities

The existing landscape consists of a mix of hardwood forest, mowed and maintained fields and natural riparian areas along Gordon Creek and the Chickahominy River. Several areas have been replanted along the internal access roads and frontage to Route 5.

The site offers a diverse range of uses that maximize the open space but it offers little access to the shoreline. An existing boat ramp and rowing team launch along Gordon Creek and fishing pier along the Chickahominy provide the access points to the water. Elevation from the site to the water is fairly steep. In addition, there is a driving range in the open grass area that operates seasonally.

### 4.1.11 Waters of the U.S. and Associated Chesapeake Bay Protection Areas

#### 4.1.11.1 Results of Fieldwork

Wetland delineations and Perennial Stream Determinations (PSD) were completed by VHB wetland scientists at Chickahominy Riverfront Park in early 2008. Delineations were carried out

in accordance with the three parameter approach outlined in the *U.S. Army Corps of Engineers Wetland Delineation Manual* (1987). PSDs were conducted using the North Carolina Division of Water Quality *Identification Methods for Origin of Intermittent and Perennial Streams, Version 3.1*. The subsequent designation of RPA features was carried out in strict adherence to both the above-cited DCR guidance and County ordinance.

Delineated areas include the vegetated shoreline of the Chickahominy River and Gordon Creek (two freshwater, tidally influenced, navigable channels); non-tidal seepage areas upslope from tidal wetlands; a forested wetland bottom in the eastern portion of the site; ditches; and a small man-made pond excavated in the center of the tract (See related Figure in Appendix E).

The U.S. Army Corps of Engineers' Jurisdictional Determination for the Chickahominy Riverfront Park is included in Appendix E. County approval of the PSD and the resulting Resource Protection Areas are also included in Appendix E.

### Tidal Wetlands

A narrow band of forested, freshwater tidal wetlands occurs along the shorelines of the Chickahominy River and Gordon Creek. These systems occur within the intertidal zone and are classified as palustrine, needle-leaf deciduous forest, seasonally inundated (PFO2R). Dominant species include a canopy mostly of bald cypress (*Taxodium distichem*) with black gum (*Nyssa sylvatica*), red maple (*Acer rubrum*), and sweet-gum (*Liquidambar styraciflua*) saplings. Vine and herbaceous vegetation includes common greenbrier (*Smilax rotundifolia*), poison ivy (*Toxicodendron radicans*), three-square bulrush (*Scirpus pungens*), big cordgrass (*Spartina cynosuroides*) and shoreline sedge (*Carex hyalinolepis*).

These tidal wetlands contain many of the species that define "vegetated wetlands" per both Chapter 22 of the County Code and §28.2-1300 of the Code of Virginia. Their landward extent is therefore defined by an elevation that is 1.5 times the mean tide range. However, the tidal wetlands at the Chickahominy Riverfront Park are largely defined by abrupt topographic breaks, especially along the Chickahominy River. Along Gordon Creek, wetlands follow the contour along the toe of steep, north-facing side slopes. As a result, the elevation coincident with 1.5 times the mean tide range is approximated by the actual surveyed wetland lines in these areas.

### Non-Tidal Wetlands

Natural non-tidal forested wetlands (PFO) occur in two locations. The largest system is located in the eastern side of the property as part of a headwater drainageway. This system contains red maple and blackgum tree species with an understory of wax myrtle (*Myrica cerifera*) and winterberry holly (*Ilex verticillata*). Vine and herb species include common greenbrier, poison-ivy, sedges (*Carex* spp.), royal fern (*Osmunda regalis*), and lizard's tail (*Saururus cernuus*). This wetland gradually transitions into tidal wetlands adjacent to Gordon's Creek. The second naturally occurring non-tidal wetland appears as a small drainage feature adjacent to the tidal fringe along the Chickahominy River. Other non-tidal wetlands include ditches and emergent wetlands (PEMx) that are dominated by soft rush (*Juncus effusus*) and woolgrass (*Scirpus cyperinus*). An open-water pond (POW) located in the eastern portion of the site has no apparent

surface connection to adjacent wetlands, but does appear to seep into a ditch along the southern edge of the pond.

### Resource Protection Areas

The Chickahominy River and Gordon Creek are both perennial stream features. Therefore, freshwater tidal and non-tidal wetlands connected by surface flow and contiguous with these streams are eligible for RPA status. The Figure in Appendix E depicts the 100-foot buffer related to those wetlands described above. However, headwater streams lying in the eastern quarter of the project area were subject to more detailed field investigation to determine whether or not these features are perennial and if their associated wetlands (if any) are contiguous with a perennial water body. Stream Assessment Reaches (SARs) were established in each of the three streams, labeled SARs A, B, and C (See related Figure in Appendix E). Each was determined to be an intermittent feature with no floodplain or seepage wetland features. Therefore, the 100-foot RPA buffer was established from the point at which each of these three streams joined that larger bottomland wetland.

*Stem of Tidal Wetland*

## 4.1.12 Threatened and Endangered Species

A review of the Virginia Department of Game and Inland Fisheries on-line database (Virginia Fish and Wildlife Information Service) was performed to determine if any listed species have been cited as occurring in the vicinity of the CRP. The following information is a summary of the results.

Eight bald eagle nests are documented in 2007 as occurring within a 2-mile radius from the Chickahominy Campground. No nests are known to occur within the project boundaries. The closest eagle nest appears to be on Gordon Island, immediately across Gordon Creek from the campground property. The records do not specify which of the eight nests are active, as it is likely that several may be abandoned. No other listed species are known to occur on or adjacent to the property.

## 4.1.13 Cultural Resources

To comply with the National Historic Preservation Act of 1966, as amended (NHPA), the Chickahominy Riverfront Park property was reviewed for effects of potential improvements on cultural resources. To initiate the effort, James City County retained the services of Geo-Marine, Inc. (GMI) to produce a Phase I cultural resources survey and archaeological inventory of the CRP and to submit required documentation to at the Virginia Department of Historic Resources (DHR) for review.

The results of the survey found that the highest concentration of cultural resources were located in the vicinity of the point of land at the confluence of Gordon Creek and the Chickahominy

River. Due to the cultural sensitivities of this area, it has been proposed for minimal disturbance uses. The approximate area of the archaeology on the site is depicted in Figure 1-4.

The existing developed and open grass areas have been disturbed over time due to construction of buildings, roads and utilities and by farming. From a cultural resource perspective, these areas are less significant and are not likely to impede the development of proposed uses in these areas.

For detailed discussion regarding CRP cultural resources, refer to the report by GMI titled, "*PHASE I CULTURAL RESOURCES SURVEY AND ARCHAEOLOGICAL INVENTORY OF THE CHICKAHOMINY RIVERFRONT PARK JAMES CITY COUNTY, VIRGINIA" dated December 2007*.

### 4.1.14 Soils

Soil types on the site are depicted in the soils map (See Appendix F, Figure F-3, Data source: VBPM VGIN 2006/07 Orthophotography and NRCS Digital Soils Database). Appendix F also contains a list describing the soil types noted on the map. In general, the soils consist of silty loam and clay that are moderate to well drained. No geotechnical investigation or testing was performed on site. From an historic perspective, the soils are assumed to be suitable for septic system leeching fields as there are several functioning septic systems at the park. The water table was not confirmed but is assumed to be at a depth sufficient to support leaching field and proposed improvements.

### 4.1.15 Shorelines

The CRP property is bordered to the west by the Chickahominy River and to the north by Gordon Creek. The shoreline along the Chickahominy extends from the bridge approximately 2,500 feet to the point of land at the confluence of the Chickahominy River and Gordon Creek. The shoreline consists of bluffs at approximate elevations of 14′ to 15′ and steep banks down to the water's edge. Most of the shoreline has trees growing near the water with sparsely vegetated understory. There are three pockets of narrow (< 10′ wide) sand beach that range in length from approximately 20′ to 50′.

*Slope Erosion along Chickahominy River*

In addition, along the top bank of the Chickahominy River, there are notable runoff-related erosion areas that are in need of treatment by bank grading and replanting of the buffer area for stabilization of the slopes. The most significant erosion areas are in the vicinity of camp sites #59 to #61, sites #17 and #22, where a split rail fence has been placed around the eroded area, and site #42.

The shoreline of Gordon Creek extends approximately 4,400 feet to the property line just east of the rowing facility. Along the top bank of Gordon Creek there are several areas of steep slopes (near vertical drops of approximately 8′ to 14′) where there is significant erosion due to storm run-off and fallen trees. This reach of Gordon Creek is more sheltered than the Chickahominy and as a result the shoreline is generally stable and not eroding. Any significant erosion issues are limited to the top of bank areas and are associated primarily with stormwater runoff rather than direct wave attack at the toe of the slope.

### 4.1.16 Stormwater Drainage

The existing site drains generally east to west to the Chickahominy River and south to north to Gordon Creek via sheet flow, grassed swales, and through drainage culverts. Slopes generally range from 1 to 3 percent throughout most of the site with an increase to steep slopes along the banks of the Chickahominy River and Gordon Creek. The stormwater drainage patterns of the project area were evaluated based on GIS topographic mapping and field inspection and observation. Topographic survey in the field was not conducted for the study.

In the central portion of the site, there is a pond that receives run-off from approximately 8 acres of the site. This pond was likely created as a watering pond for farm livestock. It serves no purpose from a stormwater management perspective. Most of the site drains by overland flow to Chickahominy River and Gordon Creek and to grass swales along Route 5 which flow toward the Chickahominy River.

There are drop inlet structures that were observed in the field that convey run-off to Gordon Creek. A series of three DI-1 type inlets and one double inlet between campsite #214 and bath house #2 connect to a single drop inlet across the park road and then outfall in the wooded area along Gordon Creek. The grates and structures appear to be in good condition and functioning well. The structures and outfall could be re-used or adapted as appropriate for future improvements.

*Slope Erosion Along Gordon Creek*

Another DI-1 inlet structure is located near camp sites #107 and #109 which outfalls to Gordon Creek via an 18″ plastic pipe through a wood timber bulkhead. The bulkhead is in poor condition and is failing. Use of this system for future improvements in its current condition is not recommended. A new bulkhead in concert with bank stabilization improvements are needed in this area.

Along the top bank of Gordon Creek there are several areas of steep slopes (vertical drop of approximately 12′-15′) where erosion due to stormwater run-off and fallen trees is significant and in need of treatment by bank grading and replanting of the RPA buffer area.

These areas of erosion are all fairly small localized drainage areas that would be addressed during site design to dissipate the currently concentrated run-off and minimize the potential for concentrated run-off which is creating rills down the bank. The drainage design would be coordinated with slope stabilization, buffer planting and shoreline erosion control techniques in order to ensure a slope down to the shoreline.

### 4.1.17 Floodplain

Portions of the CRP parcel are within the 100-year floodplain as designated and shown on FEMA Flood Insurance Rate Map Numbers 51095C0096C and 51095C0115C, effective date September 28, 2007. The 100-year base flood elevation is 7.5 feet. The area along the shoreline is Zone AE (7.5') and the area of the point near the water is Zone X (500-year flood plain). Floodplain issues do not impact proposed program elements. (See Figure 1-7)

### 4.1.18 Hazardous Materials

There were no reports of hazardous materials known to be located on the property and none were observed during field inspections.

## 4.2 Land Use Constraints

### 4.2.1 Resource Protection Areas

According to Chapter 23 of the Code of James City County, Resource Protection Areas (RPAs) are the component of the Chesapeake Bay Preservation Area. RPA buffer areas on the sites are depicted on the constraints maps and the planning proceeded with respect to the buffers and avoiding impacts. Land disturbance and development of allowed uses within the buffers were minimized to the extent possible. A full discussion of the RPA buffer line determination and associated wetland delineations are contained in the Waters of the U.S. and Associated Chesapeake Bay Protection Areas section above.

It should be noted that the plan acknowledges that additional Resource Management Area (RMA) buffers may be required along the tidal mainstem of Gordon Creek. The specific location and extent of the extended buffers would be determined at the time of final design and approval.

### 4.2.2 Property Line Setback and Community Character Corridor

Per James City County Zoning Ordinance, Section 24-535.4 the dimensional standard for minimum yard requirement (building set-back) is a 35-foot set back from the property line and is shown on the master plan. The set back line identifies the outer boundary limit for potential development.

John Tyler Highway (Route 5) is a Community Character Corridor (CCC) which is considered to be an entrance corridor that promotes the rural, natural, or historic character of JCC. There is a 50' CCC buffer along the road that is respected in the proposed master plan by maintaining the existing natural buffer and enhancing it to the extent possible. In the final design of park

improvements, every effort should be made to provide a buffer of up to 150' in order to fully screen RVs, buildings and other campground amenities.

### 4.2.3 Other Infrastructure Constraints

There were no observed issues related to existing infrastructure that create significant constraints on the site in terms of future development and improvements.

The objective of the preliminary site evaluation was to determine the site opportunities and constraints and to evaluate the project area for areas most feasible for further park improvements and development of additional park amenities. The table below summarizes the areas of various types of designated land and buffer areas.

| Description of Areas | Approximate Area (acres) |
|---|---|
| Overall Site | 138.6 ac |
| USACOE Confirmed Wetlands | 21.7 ac |
| Resource Management Area (100' buffer) | 26.1 ac |
| Steep slopes (> 30%) | 2.0 ac |
| Property Line Set Back | 7.3 ac |
| **Developable Areas[1] (per Master Plan):** | 83.5 ac |

[1] Developable area consists of land within the property line and outside of the above listed constraints

Figures 1-4 and 1-7 depict the environmental and site constraints of the property. Of the overall 138.6 acres, approximately 21.7 acres are USACOE confirmed wetlands and approximately 83.5 acres are developable.

## 4.3 Conceptual Site Improvements

The following section discusses the details of the concept plan depicted in Figure 4-2. The plan shows the proposed park elements, roads, parking, and associated amenities relative to the environmental, physical and zoning constraints of the site.

Once the overall site constraints were understood and documented in the constraints map, layout of the park program elements began. Throughout the master planning process, various layouts evolved which were based on the continuing evaluation of the site and by public input. Several variations of the CRP concept plan layouts were considered, evaluated and revised by the project team prior to the development of the proposed plan and associated alternatives.




Figure 4-2
**Master Plan**
Chickahominy Riverfront Park

Several key decisions were made during the planning process are important to the final proposed concept plan. They are presented below as general discussions and are not listed in terms of importance.

Table 4-1 summarizes the number of proposed and existing picnic shelters, campsites and boat slips for CRP that are discussed in detail in the following sections.

**Table 4-1 Proposed Development Summary**

| | | Prop. Quantity | Approx. Existing Quantity |
|---|---|---|---|
| **Public Picnic Shelters** | Large (16' x 20' to 20' x 30') | 4 - 6 | 2 |
| | Small (12' x 12' to 16' x 16') | 18 - 24 | 0 |
| **Camp Sites** | Primitive | 30 - 50 | 87 |
| | Small RV Camping | 40 - 60 | 53 |
| | Large RV Camping | 50 - 60 | 33 |
| | Cabins | 30 - 60 | 0 |
| **Boat docking/mooring** | Dock Wet Slips | 50 - 60 | 0 |
| | Moorings | 8 - 16 | 0 |

The sections below that are designated "A" through "V" refer directly to program elements depicted on the master plan, Figure 4-2.

### 4.3.1 A-Camping Opportunities

#### A-1 Primitive Campsites

The concept plan shows revitalized primitive campsites along Gordon Creek from the boat ramp to the point of land to the west at the Chickahominy River. Primitive camp sites (A-1) are defined as camp sites without any utilities (water, sanitary or electric). Campers using these sites use the bath house/restroom building associated with the campsites. The primitive sites are shifted inland somewhat from the existing primitive sites to provide a greater buffer along Gordon Creek and allow for bank stabilization as needed in currently eroding areas.

In addition, to the east of the boat ramp, there are primitive sites that may be simple tent sites or primitive sites with a wooden tent platform as depicted. The platforms would be generally placed at locations of existing tent and RV sites and would be constructed with space between the deck boards to allow rain water to pass through the structure. In general, the proposed camp sites would replace and improve the existing compacted gravel sites and vehicle access ways and parking areas. In the final design, every effort would be made to move sites away from the shoreline and to stabilize the sites in order to improve the buffers.

A proposed natural mulch path traverses along the top of bank and takes advantage of the scenic views. The sites will be placed among the trees, similar to existing camp sites, so that any needed tree removal and selective trimming is minimized. Tree removal will be primarily to remove dead or damaged trees. This area can accommodate up to approximately 20 to 30 primitive sites depending on the density of the final camp site layout which will have to take into account

existing trees, topography and the proximity to the top of bank. For comparison purposes, there are approximately 21 sites currently in this area.

#### A-2 Rental Cabins

The camping area pods are indicated as cabins on the plans, but could alternatively be tent platforms or primitive campsites, or a mix of these. This flexibility allows the construction of cabins to be phased over time starting with primitive or RV camping and progressing to cabins as demand dictates and funding allows. The cabins would be designed to accommodate a family or small group, and would likely include two to three bedrooms, bathroom(s), a living area, a small kitchen area and perhaps a sleeping loft. The cabins would also be oriented to take advantage of the water views, and would incorporate porches for outside seating.

The pods of cabins depicted on the concept plan can accommodate approximately 30 to 60 cabins depending on the density of the final site design.

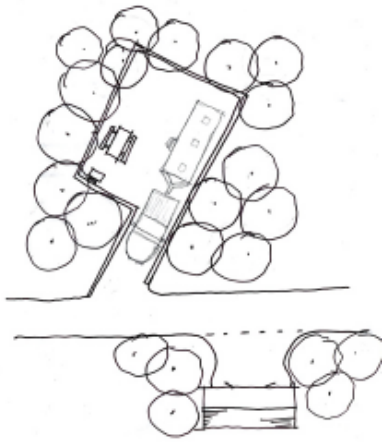
Rental cabin pods may be interchanged with RV sites depending on the future demand for each type of camping opportunity and its revenue potential.

### 4.3.2 B-Bath House

The bath houses replace existing aging bath houses on the property and would be fully ADA accessible. In addition to the men's and women's restroom and shower facilities, the buildings would also house campground electrical distribution panels and storage facilities. The bath house buildings could also potentially include either vending or laundry facilities as well. The buildings would stylistically blend with the more rustic nature of the park and be designed for durability and easy low-cost maintenance.

### 4.3.3 C1-Small RV Campsites

The plan shows new small RV campsites within the wooded area on the east side of the park. Small RV camp sites are defined as camp sites with connections for a minimum of water and electric and possibly sanitary if cost considerations are such to make a sanitary system feasible. There is a bath house/restroom building associated with these campsites for use by campers. The small RV sites are just within the edge of the existing tree line. The sites will be placed among the trees as are the existing RV sites so that any tree removal is minimized. For clarity in showing the conceptual RV site layout, the concept plan appears to graphically show more intense tree clearing than would be necessary. Tree removal will be primarily to create open space for maneuvering a RV into place and vehicle parking. The clear area needed is approximately 1000 SF (20' x 50') and in addition, dead or damaged trees are also removed. The surface of sites may be left natural rather than hardened with gravel, crushed concrete or a concrete slab.



*RV Camp Detail*

The small RV areas depicted on the plan can accommodate up to approximately 40 to 60 small RV sites depending on the density of the final camp site layout which will have to take into account existing trees, topography and drainage. For comparison purposes, there are approximately 53 sites currently with either electric only or both water and electric at the park.

A mulch path winds through the wooded area east of the RV camping area from Route 5 to the park road along Gordon Creek.

### 4.3.4 C2-Large RV and Motorhome Sites

Slightly larger sites are proposed for motor homes and large RV trailers (i.e. towed "5th wheel" campers). The plan shows large RV campsites within the wooded area on the east side of the park adjacent to Route 5. The large RV camp sites are defined as camp sites with full service connections for water, sanitary and electric. The RV sites are placed in the wooded area and are densely screened from view from Route 5. For clarity, the concept plan appears to graphically show more intense tree clearing than would be necessary. The clear area needed is approximately 1300 SF to 1400 SF (approx. 22' x 60'). Due to heavier loads imparted by the larger RVs, these sites are typically hardened with gravel, crushed concrete or a concrete slab.

The large RV area depicted can accommodate up to approximately 50 to 60 large RV sites depending on the density of the final camp site layout which takes into account existing trees, topography and drainage. For comparison purposes, there are approximately 33 existing sites currently with full hook-up service consisting of water, sanitary and electric.

### 4.3.5 D-RV Waste Disposal

A waste disposal facility is centrally located in the RV area of the park and is served by water and a septic system/leech field.

### 4.3.6 E-Grass Event Area

In the center of the park, the large open grass event area is maintained and improved with facilities and utilities to support events, such as the county fair, carnivals, festivals and other events. The area will be lightly graded to prevent drainage problems and planted with fescue and mowed and maintained with the seasonal growing pattern. This area will continue to be operable for the driving range when no events are scheduled. Deciduous hardwood trees will be planted along the internal circulation routes to provide shade and spatial division. The design intent of the space will be to provide flexibility for events and parking demands associated with them.

### 4.3.7 F-Fixed Wood Docks and Moorings

Two fixed wood docks for sail boats, transient boaters and campground/boat ramp patrons are depicted on the plans. The availability of wet slips onsite will allow camping patrons that tow a boat to be able to launch the boat once during their stay at the park and leave it in the water at the dock for the duration of their visit. The waterfront dock area may accommodate up to three docks with a slip capacity of 50 to 60 slips (approximately 20 to 26 slips per dock). Some (or all) of

the docks may be equipped with water and electric power depending of the intended vessel type and user.

Moorings for larger vessels can be accommodated along the shore of the Chickahominy River. The area can likely provide moorings for 8 to 16 vessels, or more depending on vessel size, water depth and permitting considerations. Patrons using the mooring can shuttle to and from shore on dinghies and land at the cove area beach just north of the docks.

### 4.3.8 G-Organized Parking for Existing Boat Ramp

The existing boat ramp is heavily used, therefore an organized parking area for approximately 60 vehicles with trailers would be provided adjacent to the ramp. The parking surface is stabilized with open concrete pavers and striped to designate parking spaces. For peak periods of ramp use, there is ample overflow grass parking area adjacent to the organized parking area.

### 4.3.9 H-Kayak/Canoe Launch and Rowing Facility

The main location for non-motorized vessel launching and recovery would be located at the canoe/kayak and rowing facility located on Gordon Creek at the east side of the property. This location could also serve as a rental facility for canoes, kayaks and jon boats.

The boathouse would support activities of the rowing groups by providing storage space for rowing equipment and meeting/educational space with restrooms. The structure would be designed to be of a style consistent with the character of the buildings in the rest of the park, while incorporating elements of traditional boathouse design. Material choices would be durable, and the building would be built with the main floor elevation above the level of the flood plain.

In addition to this site, kayak and canoe launching is also possible at the boat ramp, although not recommended due to the conflict between motorized and non-motorized vessels in close proximity to each other. However, this location does reduce the paddling distance to the Chickahominy River by approximately 2,300 feet.

*Canoe/Kayak Launch in Northfield, Illinois*

Another alternative for kayak/canoe launching is depicted on the concept plan directly north of the fishing pier ("R") and is described below.

The rowing facility would be arranged for use by local rowing clubs and organizations. The layout is conducive to convenient transporting of rowing shells from the boat house to the dock. The facility development includes the removal and replacement of the existing floating dock with an upgraded new dock and the construction of a boat house for secure storage of rowing shells. A gravel parking area along the park road for approximately 16 to 24 vehicles is provided for

facility users. In addition, overflow parking is available in the grass areas along the road for an additional 24 to 30 vehicles.

### 4.3.10 I-Existing Pool/Shelter and Play Area

Improvements around the existing pool and playground are limited. However if the road were realigned slightly to the north, the increased area would open up new opportunities for users to have alternative activities nearby. Expanding the existing parking areas and providing pedestrian connectivity to the proposed riverfront uses, which feature new pavilions, docks, and lawn areas, will make this a central feature of the site. Landscaping will be used to identify the area, screen it from Route 5 and provide shade opportunities around the passive and active areas, as well as the parking lots.

*Existing Playground Adjacent to Pool*

### 4.3.11 J-Picnic Pavilion

This is the main pavilion for the site and would be located at the center of the waterfront, pool and playground activities and near the park office building. It is an open pavilion with picnic grills, picnic tables and benches and water service. In the final layout of picnic shelters and pavilions, every effort should be made to keep them above elevation 7.5' and out of the flood plain.

Its construction would consist of a sizeable glue-laminated timber framed shelter structure and would also include its own open area adjacent to the structure. The picnic shelter pavilion on the point also includes a campfire ring overlooking the Chickahominy River and Gordon Creek. Restroom facilities and some storage can also be accommodated within the structure, or in nearby enclosed structures.

### 4.3.12 K- Stabilize Shore and Create Beaches

The shoreline stabilization improvements and subsequent pocket beaches create an opportunity for park users to access the water at some of the most scenic locations of the park. See the related section below for a full description of the proposed improvements.

*Small Breakwaters with Vegetation*

### 4.3.13 L-Small Picnic Pavilions

In conforming to the stated desire to keep the park open for public use, a public picnic and daytime use area is designated along the Chickahominy River to the point at Gordon Creek. This area offers the very best scenic views of the river and creek from the highest point of land on the site. In addition, this is the most archaeologically sensitive area of the site and therefore proposed improvements are limited to very low impact uses that require minimal land disturbance and infrastructure such as picnic areas and primitive campsites.

The small picnic shelters would likely be glue-laminated timber framed structures on concrete slabs, similar to the existing structure adjacent to the swimming pool. These structures are durable and are provided in several standard sizes that can accommodate various functions and a wide range of group sizes.

The picnic shelters can range from types constructed in-house by JCC staff to pre-fabricated shelters with a consistent style and quality of construction such as shelters by EnWood Structures, LLC, Polygon (W. H. Porter, Inc.) or NaturalStructures.com. The structures would be placed on concrete slabs with mulch paths leading to them from parking areas. Associated with the picnic sites are cook grills, trash cans and bike racks.

### 4.3.14 M-Campground Store and Ticketing

The building is approximately 4,500 SF and serves as the headquarters for the park, and as such, would accommodate a store, offices, storage and public restroom facilities. As the main park building, it would also incorporate a meeting/activity room and associated support spaces that could accommodate 50 to 75 people for either an educational event or activity. As a gateway to the park, it is important that the building design be carefully considered regarding function and stylistic character. It should be of durable construction, while providing the maximum use flexibility and the ability to be expanded to accommodate future growth, if needed. The building should also be capable of monitoring the park and its systems, including security throughout the park. The building design should incorporate large porches both from the standpoint of creating a welcoming appearance and also to provide places for people to gather, interact, and as a waiting area for others who are inside the building conducting business. The porches can also provide opportunities to view the river and other park activities.

An alternative location for this building is slightly to the east where the entrance road intersects with the new road between "O" and "E." This location provides increased visibility from Route 5 and also would provide direct access to the building for park visitors using the new road.

*Shelby Farms Park Visitors Center*

### 4.3.15 N-Maintain Existing Boat Ramp

The existing boat ramp is to remain in use with no major renovations or improvements proposed. Routine maintenance of the facility, such as periodic sealing of the wood dock, should be completed in order to extend the functional life of the docks.

### 4.3.16 O-Multi-Purpose Area

The multi-purpose open greenspace area can be flexibly utilized for a variety of uses from overflow parking during large events and the County Fair, to unofficial softball or soccer games. The area can potentially accommodate two soccer fields as depicted in "O" on the concept plan.

### 4.3.17 P-Existing Pond Activities

The existing pond could be improved to increase its depth and be stocked with fish to provide a fishing experience for park users and campers. Additionally, paddle boats or other water activities could be offered here. Landscaping improvements around the pond also add to the viewshed from the proposed cabin camping area on the east side of the pond.

### 4.3.18 Q-Existing Fishing Pier

New pedestrian connections to the fishing pier are proposed along the waterfront. No improvements are depicted for the fishing pier as any future pier improvements would occur within the existing footprint of the pier. When the fishing pier is replaced, its deck elevation should be raised to avoid being submerged during high tide events.

*Improved Fishing Pier (Roger Smith Landing, York County)*

### 4.3.19 R- Canoe/Kayak Launch Area

This location currently serves as a "slide in" launching site for flat-bottomed fishing boats, canoes and kayaks. It is well situated near the primary waterfront activities and remains a good use for this area for a similar "slide in" launch. It provides direct access to the Chickahominy River without the relatively long paddle from the launch at the rowing facility; however, its use is more limited, especially during the winter season, due to its exposure to wind and waves. The area is depicted with wood dock viewing area which could have a covered area with benches for seating.

### 4.3.20 S-Picnic Area

It was important for the plan to dedicate a portion of the site for passive recreational day uses and picnicking opportunities that JCC residents could enjoy without paying a fee. This area is high on the bluffs and provides the most scenic views of Gordon Creek. The area currently has primitive camp sites which can easily be converted to picnic sites with shelters without tree clearing or significant land disturbance so as to protect the RPA buffer area.

### 4.3.21 T-Controlled Access Gate

A second access point would be constructed that would be used primarily as a large RV exit and for egress during large events such as the County Fair and other festivals.

### 4.3.22 U-Existing Water Well Pump House

The existing well water pump house would remain in full operation.

### 4.3.23 V-Bank Grading and Buffer Restoration

Eroding banks and poorly vegetated and denuded buffer areas would be restored by selective bank grading and replanting buffer areas with native grasses, shrubs and trees. See the related section below regarding shoreline stabilization.

### 4.3.24 W-Seasonal Food Concession

A seasonal food concession facility is planned near the docks in the vicinity of the picnic pavilion area. The restroom/concession structure is located within the footprint of the existing house/maintenance building. The new concession building would be designed to be in keeping with the rural character of the structures in the park and would include restrooms, a concession and vending area, a sheltered eating area, and potentially storage and other services that would support adjacent fishing and boating activity.

### 4.3.25 X-Maintenance Facility

The maintenance facility is located directly off of the park road. It provides JCC park staff easy access to all park amenities and camping areas. Adequate parking would be provided for maintenance vehicles. This facility would likely consist of space for the storage, equipment maintenance/shop area and restrooms.

### 4.3.26 Y-Bioretention Basin

Bioretention basins are shown on the plan to indicate the need for stormwater treatment for proposed parking, camp areas and buildings. Stormwater would be treated as close to the source of run-off as possible. Small bio-retention basins contoured to compliment the landscaping and which facilitate a direct drainage route from the hard surface areas are proposed. The actual location and size of bioretention basins depend on the final design of the proposed improvements.

### 4.3.27 Boat and RV Storage Area

A fenced area for seasonal boat and trailer storage was discussed and considered during the master planning of the park. Dedicating land for this type of use was determined to generally be not compatible with other park uses and that other more suitable sites exist within James City County. A storage facility of this type has several drawbacks such as poorly maintained boats and RVs may develop oil or fuel leaks directly into the soil which can go undetected indefinitely. In addition, the facility competes with private businesses within the county that provide storage services. If JCC were to pursue providing a fenced-in storage area, the most suitable area would be on the east side of the road leading down to the Rowing Facility, generally in the area where there is currently unorganized storage of boats and trailers.

### 4.3.28 Shoreline Stabilization and Creation of Pocket Beach Areas

Improvements are needed in a few locations along the shoreline to stabilize eroding bank areas. The shoreline improvements will have a three-fold benefit of stabilizing the bank, providing for buffer planting and restoration and the creation of small pocket beaches which provide access directly to the water for park users.

At the top bank of the Chickahominy River, there are notable runoff related erosion areas that are in need of treatment by bank grading and replanting of the buffer area for stabilization of the slopes. The most significant erosion areas are in the vicinity of camp sites #17 and #22 where a split rail fence has been placed around the eroded area. In addition, there is bank erosion in the vicinity of site #42 and from site #59 to #61. In these areas, bank grading is required to lay back the slope to of approximately 1.5′ H: 1.0′ V to 2.0′ H: 1.0′ V. The new graded slope is further stabilized and the RPA buffer restored, by planting native grasses, shrubs and trees along the slope and within the RPA buffer.

On the Chickahominy River, there are three existing natural pockets of narrow (< 12′ wide average) sand beach that range in length from approximately 20′ to 50′. These beach features could be enhanced with the construction of stone spurs which extend out from the shoreline into the water at an angle to the shoreline. A spur is placed at each end of the sand beach and additional sand fill placed between the spurs to create a wider and more stable beach feature. The combination of the spurs and beach fill will protect the toe of the bank slope.

Also along the top bank of Gordon Creek there are several areas of steep slopes (near vertical drops of approx. 8′ to 14′) where there is significant erosion due to storm run-off and fallen trees. This reach of Gordon Creek is quite sheltered from wave attack and as a result the shoreline is generally stable and not eroding due to wave action. There is little opportunity for the creation of pocket beaches along this reach of the creek. The eroding banks would be treated with similar measures of bank grading and planting as along the Chickahominy shoreline. Implementation of shoreline improvements may potentially be funded through Living Shoreline grant funding or other similar sources of funding.

### 4.3.29 Park Trail

A trail system of approximately one mile wraps around the park and provides access to the primary park amenities including the pool area, fishing pier and docks, picnic and camping areas and the rowing facility. The trail meanders through the wooded areas and connects to the Virginia Capital bike trail at Route 5. The trail is surfaced with mulch and maintained in a very natural state. Small diameter plastic piping will be used to convey water across the trail where necessary to minimize water collecting along the edge of the trail.

### 4.3.30 Vehicle Circulation

Vehicle circulation throughout the park remains essentially the same with a few minor changes to some park roads and the extension of the road through the new RV camping areas.

#### Main Entrance at Route 5

The existing main entrance to the park is new and functions well and as such, there are no proposed improvements needed. A secondary entrance/exit is proposed approximately 2,250 feet to the east of the existing entrance directly across Route 5 from the proposed entrance to the residential development on the south side of Route 5. This entrance/exit will be controlled with a gate and will not be used as a primary entrance point. It will be used primarily for exiting RVs and vehicles during special events.

#### Internal Road

The internal park road from the entrance at Route 5 enters the park and then a proposed new paved road branches off to the north across the grass field for a more direct connection to the proposed cabin areas and the road leading to the rowing facility and the RV camp sites.

The portion of the existing paved road leading to the pool parking lot is realigned slightly to provide additional space around the pool, shelter and playground area and to create access to the proposed main park office and camp store building. This realignment serves to provide vehicle access to the fishing pier area for drop-off and pick up of people and recreational equipment. It also serves to pull the access road further away from the water which opens up space for a picnic pavilion and other waterfront amenities.

From the office/camp store building, the road continues north directly to the boat ramp and ties into the existing alignment of the road to the boat ramp. The approach to the boat ramp remains essentially unchanged.

There is a loop road off of the main park road that goes around the point connecting the picnic shelter area and the primitive camping sites. This road is realigned landward from the existing road by approximately 50′ to 75′. The new road alignment allows the RPA buffer to be more fully restored and needed bank grading to occur as described above. In addition, it also creates more usable space along the top of the banks and takes advantage of the best scenic water views.

From the boat ramp the road is paved east past the cabin area to the loop road of the RV sites. The proposed road alignment is moved inland from the existing road up to approximately 120′ in

the area of the new bath house. It then moves back to the existing alignment and follows it as the existing gravel road down to the rowing facility.

In the vicinity of the existing water well pump house, a new paved main road is constructed with secondary gravel loop roads through the RV camp sites leading to the new entrance/exit at Route 5.

### 4.3.31 Parking

Adequate parking has been provided in the plan for the proposed park program elements. Over 900 spaces are proposed in the master plan with the possibility of expanding the total number by utilizing overflow parking in grassed areas along roads. Below is a table comparing in general terms the proposed parking to the existing parking currently at the park.

**Table 4-2 Parking Summary**

| Parking Spaces | Proposed | Existing |
|---|---|---|
| Boat Ramp vehicle & trailer parking | 60 | 60 (grass) |
| Picnic Shelter Area | 30 -40 | NA |
| Rowing Facility- gravel | 16 - 24 | 18 |
| Rowing Facility- grassed overflow | 24 - 30 | 0 |
| Pool/Shelter/Play Area | 42 | 30 |
| Office/Camp Store | 14 - 16 | 8 |
| Fishing Pier/Dock area | 68 | 40 (gravel/grass) |
| Overflow Adjacent to Roads (grass) | 130 | NA |
| Cabins and Bathhouse Areas (3) | 80 - 90 | 14 - 20 |
| RV Bathhouse Area | 12 - 14 | NA |
| Event/Overflow (grass) | 400-450 | 400-450 |
| Parking Totals | 876-964 | 570-626 |

### 4.3.32 Site Access and Traffic Impacts

Per the trip generation chart provided in Appendix G, daily trips to the expanded park facilities will increase from approximately 280 to approximately 1,300 trips.

A preliminary traffic impact analysis was performed to determine whether turn lanes may be required on Route 5 due to the proposed improvements. The analysis used 2007 VDOT average daily traffic (ADT) data provided by JCC and the number of vehicle trips generated by the proposed uses from the Institute of Transportation Engineers (ITE) publication, *Trip Generation, 7th Edition*. The left and right turn lane warrants analysis followed the VDOT Road Design Manual, Appendix C method.

The results of the analysis are that no left or right turn lanes into the park are required. Refer to Appendix G for detailed information in support of the preliminary traffic impact analysis.

*Note: Existing traffic patterns and available traffic data provided by JCC were considered in the overall development of the concept plans; however, a Traffic Impact Study (TIS) was not included in the project scope of work nor performed as part of the evaluation. It is understood that a Traffic Impact Study would be required for the proposed program elements. The TIS is required to determine the final traffic impacts to adjacent roads and site access requirements.*

The proposed eastern entrance will not be accessible to, or used by, daily park guests or normal park traffic. It will be gated and used primarily for exiting recreational vehicles and large event egress; therefore no turn lane is being required at this location.

In the case of special events, such as the county fair, traffic considerations will be planned in advance by JCC and manned traffic control will be onsite as needed.

### 4.3.33 Stormwater Management

The proposed park program elements do not significantly increase runoff or alter the characteristics of the existing drainage patterns on the site. The site would continue to drain primarily by sheet flow and collect in shallow swales at the perimeter of developed areas. The shallow swale systems would convey stormwater runoff to Low Impact Development (LID) measures such as infiltration trenches, sediment forebays, and bioretention cells and dry swales. Areas not proposed for park amenities will remain undisturbed and existing drainage patterns would remain.

The total proposed impervious area is conservatively estimated to be approximately 11% or less for the site. Based on James City County code section 23-10-4, any site exceeding 10% impervious cover is required to have a structural BMP. Currently in JCC, compliance with nonpoint source pollution control requirements for CBPA is based on the BMP Point System per "James City County Guidelines for Design and Construction of Stormwater Management BMP."

Since it is likely that this site will be constructed in various phases, a stormwater management master plan should be completed and approved before detailed site plans are developed to ensure overall compliance with the BMP 10-Point System. Treatment can be provided in the phased development through bio-retention, dry swales, other LID measures, including the potential renovation of the pond in the center of the site to JCC BMP standards. In addition, each BMP system would need to have an adequate drainage bypass.

Possible locations for the bioretention basins are shown on the master plan; however final location and size of the basins would be determined at the final design and approval stage. The concept plan acknowledges that additional RMA buffering may be required along the Gordon Creek tidal mainstem. The specific location and extent of the buffers would also be determined at the final design and approval stage.

Areas along the top bank of the Chickahominy River and Gordon Creek where concentrated stormwater run-off is creating rills and eroding the slope would be treated with bank grading as discussed in the Shoreline Stabilization section above.

### 4.3.34 Proposed Utilities

#### Water Service

Water service would be provided to the site via the existing water well and pump house facility located on the eastern side of the site. The existing main water line is a 4-inch line that runs west to the vicinity of the boat ramp. New services would be connected to the water main as shown in the proposed utilities schematic (Figure 4-3). The water demand is anticipated to increase by approximately 20-30% due to the inclusion of cabins even though the overall total number of camp sites remains approximately the same. The demand needs would gradually increase over time in step with the addition of cabins and new RV campsites. If and when the demand exceeds the existing well capacity, a second well would be brought online. A potential location for a new well would likely be in the wooded area between the smaller RV campsites, C1 and the larger RV campsites, C2.

Depending on building code requirements for new buildings, fire protection may require that a water tank and pump be installed at appropriate locations to provide water to sprinkler systems.

#### Sanitary Service

There is a total of 10 sanitary sewer collection points for buildings, bath houses and campsites proposed for the park. Two existing septic tanks and leech fields could likely remain in service for the future improvements. The remaining five existing septic systems would be taken out of service and eight new systems installed. The proposed sanitary system and various options are summarized below.

An estimated demand of 5 gallons per person per day (from the National Standard Plumbing Code) was used to estimate the sanitary septic system needs of the proposed improvements. Various types of systems may be suitable for the site depending on location, demand requirements, water table elevation, soils and vegetation. The types of systems that may be suitable for the site include the following:

- Conventional septic tank and leeching field systems (the system currently in operation at the park)
- Subsurface drip system/dosing pump system (Septic Plus Drip System)
- AdvanTex Treatment System/dosing pump system
- Presby Environmental, Inc. system (septic tank and proprietary leeching field system)

The approximate leeching field size depicted on Figure 4-3 is based on a standard septic tank and leeching field system and is conservatively shown as approximately one and a half times the actual size required to treat the anticipated demand for each location. The Presby system is a high efficiency system that provides a

smaller leeching field footprint than conventional systems; however at this time, the Presby System is not approved by the Virginia Department of Health. If the Presby system were to obtain approval by the VDH, it would be s suitable system for the site. For informational purposes, the Presby System is described in more detail in Appendix K along with two other septic system alternatives.

A standard leeching field system appears to be the most suitable system for improvements proposed for the park due to its low initial construction cost and low maintenance.

#### Dominion Virginia Power

The electrical service system was evaluated in the field to determine potential routing options available for tying in new electrical services to the existing electrical system serving the site. The two main electrical service feeds into the site from Route 5 will remain as they are currently. To the extent possible, new electrical services within areas of proposed improvements will be placed underground in an effort to increase reliability (minimizes interruptions in electrical service due to storm damage from fallen trees and branches) and improve the visual viewsheds of the park (minimize unsightly poles, pole mounted transformers and wire from view).

#### Natural Gas

There are no proposed plans to provide Virginia Natural Gas service to the park. Propane will be provided to buildings as required from new propane tanks placed in suitable locations near the point of use and sufficiently screened from view with landscaping or fencing as deemed appropriate.

#### Telephone

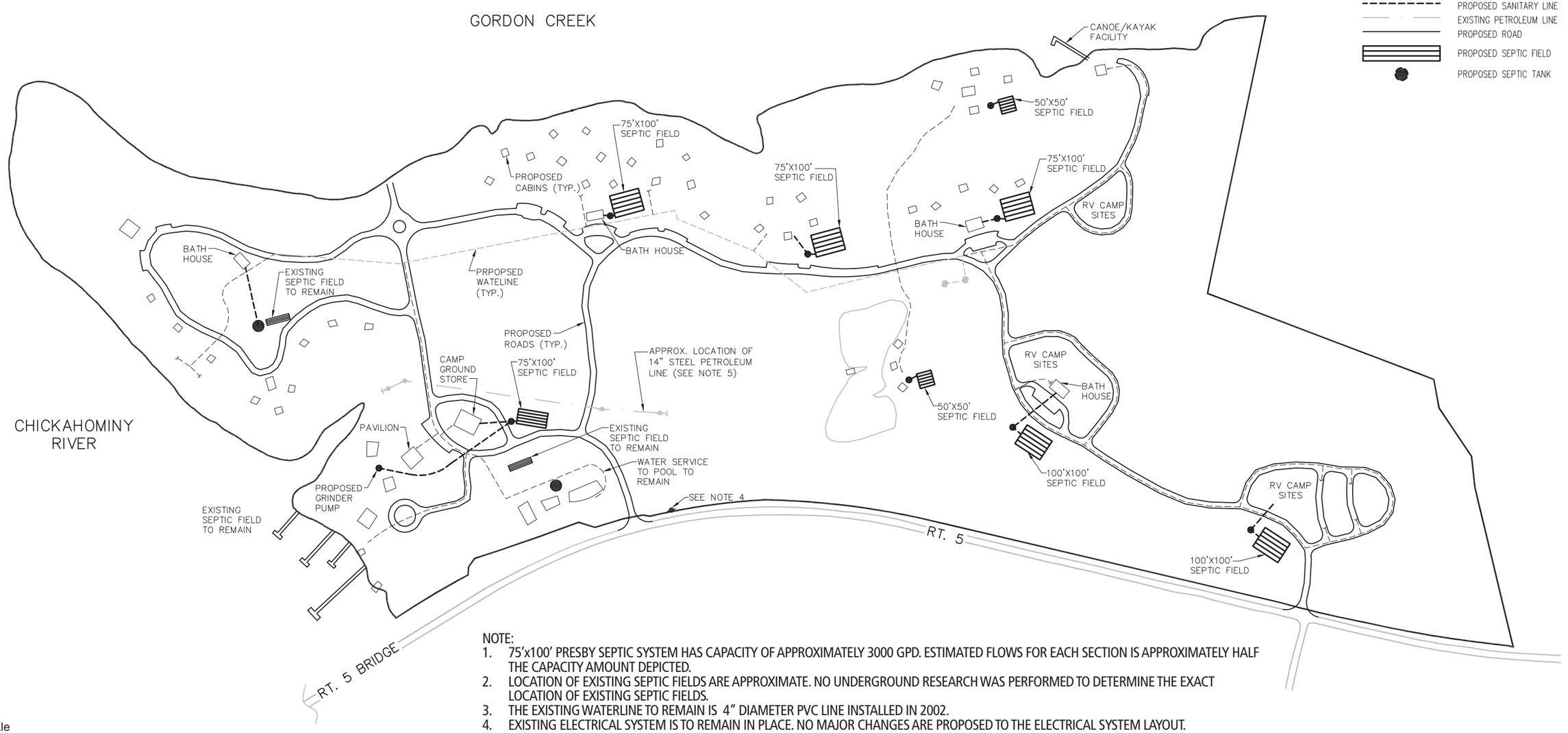
There are no proposed plans to upgrade the existing telephone system at the park other than to make new service connections as required to buildings accommodating park staff and operations.

#### Fiber Optic

There are no proposed plans to upgrade the communications/data capability of the park with fiber optic service.

### 4.3.35 Cultural Resources

The results of the archaeological survey by GMI found significant cultural resources located in the vicinity of the point of land at the Chickahominy River and Gordon Creek. Proposed improvements in this area have been limited to those shown on the plan so as to respect potential cultural resources that may be present on site (See Figure 1-4).




NOTE:
1. 75'x100' PRESBY SEPTIC SYSTEM HAS CAPACITY OF APPROXIMATELY 3000 GPD. ESTIMATED FLOWS FOR EACH SECTION IS APPROXIMATELY HALF THE CAPACITY AMOUNT DEPICTED.
2. LOCATION OF EXISTING SEPTIC FIELDS ARE APPROXIMATE. NO UNDERGROUND RESEARCH WAS PERFORMED TO DETERMINE THE EXACT LOCATION OF EXISTING SEPTIC FIELDS.
3. THE EXISTING WATERLINE TO REMAIN IS 4" DIAMETER PVC LINE INSTALLED IN 2002.
4. EXISTING ELECTRICAL SYSTEM IS TO REMAIN IN PLACE. NO MAJOR CHANGES ARE PROPOSED TO THE ELECTRICAL SYSTEM LAYOUT.
5. LOCATION OF EXISTING PETROLEUM LINE IS APPROXIMATE. PETROLEUM LINE ALSO CONTAINS 25' EASEMENT ON EITHER SIDE. CARE SHOULD BE TAKEN WHILE WORKING OVER/NEAR THE PETROLEUM LINE.

Not to Scale



Figure 4-3
**Proposed Utilities**
Chickahominy Riverfront Park